

APPLICANT(S): SPIEGEL, Solon J. et al.
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AMENDMENTS TO THE CLAIMS

Please add or amend the claims to read as follows, and cancel without prejudice or disclaimer to resubmission in a divisional or continuation application claims indicated as cancelled:

1. (Previously Presented) An apparatus comprising:
 - a first filter having a programmable number of poles operably coupled to an input of a buffer;
 - a second filter having a programmable number of poles operably coupled to an output of the buffer; and
 - a programmable convolver operably coupled to an output of the second filter and wherein the programmable convolver is able to filter a received signal of a wireless communication system by programming an impulse response based on a characteristic of the received signal.
2. (Previously Presented) The apparatus of claim 1 comprising:
 - a memory to store the impulse response; and
 - a digital to analog converter (DAC) to provide a time phase of a stored impulse response to the programmable convolver.
3. (Previously Presented) The apparatus of claim 2, comprising:
 - an automatic gain control to control an output signal level of the programmable convolver.
4. (Canceled)
5. (Previously Presented) The apparatus of claim 2, wherein a resolution of the digital to analog converter and a sampling rate of the digital to analog converter are set according to the received signal characteristic.

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6. (Previously Presented) The apparatus of claim 1, wherein a length of the impulse response is set according the received signal characteristic.

7. (Previously Presented) The apparatus of claim 1, further comprising:
an amplifier operably coupled to an output of the programmable convolver; and
a second digital to analog converter operably coupled to the output of the amplifier.

8. (Previously Presented) The apparatus of claim 2, wherein the memory comprises two or more impulse responses, and the programmable convolver is programmed with the impulse response selected from the two or more impulse responses according to the characteristic of the received signal.

9. (Previously Presented) The apparatus of claim 1, wherein the programmable convolver is a complex programmable convolver.

10. (Previously Presented) The apparatus of claim 1, wherein the programmable convolver includes an analog output.

11. (Previously Presented) An apparatus comprising:
a receiver able to receive signals from two or more wireless communication systems having a baseband module, wherein the baseband module includes an in-phase (I) channel to filter an I signal of the received signal and a quadrature (Q) channel to filter a Q signal of the received signal and wherein both I and Q channels include a first filter having a programmable frequency response, operably coupled to an input of a buffer; and a second filter having a programmable frequency response, operably coupled to an output of the buffer and to an input of a programmable convolver.

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12. (Previously Presented) The apparatus of claim 11 comprising:

a memory to store the first programmable impulse response and the second programmable impulse response to program the first and second filters, respectively.

13. (Canceled)

14. (Previously Presented) The apparatus of claim 11, wherein both I and Q channels comprise:

digital to analog converters (DACs) operably coupled to the programmable convolver, wherein the DACs comprise an adjustable sampling rate and an adjustable resolution.

15. (Previously Presented) The apparatus of claim 11, wherein both I and Q channels comprise:

an automatic gain control operably coupled to the programmable convolver to control a signal level of the programmable convolver and to provide an average amplitude level at the programmable convolver output.

16. (Canceled)

17. (Canceled)

18. (Canceled)

19. (Previously Presented) The apparatus of claim 11, wherein the receiver is a direct conversation multi-mode receiver.

20. (Currently Amended) The apparatus of claim ~~[[12]]~~ 11, wherein the I channel and the Q channel comprise programmable complex convolvers ~~convelevers~~.

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21. (Currently Amended) The apparatus of claim [[13]] 11, wherein the first filter and the second filter are programmable convolvers ~~convoevers~~.

22. (Canceled)

23. (Previously Presented) A method of selecting a mode of a multi-mode receiver comprising:

receiving a signal;

programming a first programmable frequency response to a first filter according to a characteristic of the received signal and filtering the received signal to provide a first filtered signal;

buffering the first filtered signal to provide a buffered signal

programming a second programmable frequency response to a second filter according to a characteristic of the received signal and filtering the buffered signal to provide a second filtered signal; and

programming a programmable convolver with an impulse response of a filter based on the characteristic of the received signal and filtering the second filtered signal.

24. (Previously Presented) The method of claim 23, further comprising:

setting the first and second programmable frequency response by setting first and second number of poles to the first and second filters, respectively.

25. (Previously Presented) The method of claim 23, further comprising:

setting a sampling rate and a resolution to a digital to analog converter to switch between receiving modes of the multi-mode receiver.

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26. (Previously Presented) The method of claim 25, further comprising:
 setting a length of the impulse response according to the characteristic of the
 received signal characteristic.
27. (Original). The method of claim 26, further comprising:
 providing a combined analog and digital gain control to control a signal level
 of the programmable convolver.